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TITLE : ELECTRIC FIELD EMITTING COLD CATHODE, AND MANUFACTURE OF THE COLD CATHODE

ABSTRACT : PROBLEM TO BE SOLVED: To stabilize the action of electron emitting, and also reduce random noise to increase ion impact resistance by coating the surface or tip part of a cold cathode, constituting an electric field emitting cold cathode, by diamondlike carbon.

SOLUTION: An electric field emitting cold cathode is composed of a base cathode 1 composed of S1, a diamondlike carbon layer 2 for coating the surface of the cathode 1, an insulating coat layer 3 comprised by surrounding the cathode (protruding portion) 1, and a gate electrode layer 4, similiy surrounding the cathode 1. The feature of the cold cathode is the coating of the protruded portion surface of the cathode 1, or of the tip part of the cathode by diamondlike carbon. Since, the diamondlike carbon is stabilized chemically, an impure atom or molecule, such as oxygen, etc., is difficult to adhere to the surface of the carbon, consequently, the carbon is usefull to stabilize electron emitting action from the cathode.

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